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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,995	07/24/2001	Sei-Hyung Ryu	5308-156	5240
20792	7590	03/12/2004		EXAMINER
MYERS BIGEL SIBLEY & SAJOVEC PO BOX 37428 RALEIGH, NC 27627			TROST IV, WILLIAM GEORGE	
			ART UNIT	PAPER NUMBER
			2683	

DATE MAILED: 03/12/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No. 09/911,945	Applicant(s) S. RYU ET AL
Examiner G. MUNSON	Group Art Unit 2811

— The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address —

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE THREE MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

Responsive to communication(s) filed on 29 December 2003, 22 January 2004.

This action is FINAL.

Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 1 1; 453 O.G. 213.

### Disposition of Claims

Claim(s) 1, 2, 4-41, 83, 84, 86-89 is/are pending in the application.  
Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

Claim(s) 15, 21, 22, 26, 32, 38, 39 is/are allowed.

Claim(s) 1, 2, 4-14, 16-20, 23-25, 27-31, 33-37, 40, 41, 83, 84, 86-89 is/are rejected.

Claim(s) \_\_\_\_\_ is/are objected to.

Claim(s) \_\_\_\_\_ are subject to restriction or election requirement

### Application Papers

The proposed drawing correction, filed on \_\_\_\_\_ is  approved  disapproved.

The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner

The specification is objected to by the Examiner.

The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. § 119 (a)-(d)

Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)-(d).

All  Some\*  None of the:

Certified copies of the priority documents have been received.

Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

Copies of the certified copies of the priority documents have been received  
in this national stage application from the International Bureau (PCT Rule 17.2(a))

\*Certified copies not received: \_\_\_\_\_

### Attachment(s)

29 Dec 2003  
 Information Disclosure Statement(s), PTO-1449, Paper No(s). 22 Jan 2004  Interview Summary, PTO-413  
 Notice of Reference(s) Cited, PTO-892  Notice of Informal Patent Application, PTO-152  
 Notice of Draftsperson's Patent Drawing Review, PTO-948  Other \_\_\_\_\_

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Claims 4, 7, 25, 27-31, 33-37 and 86 are rejected under 35 U.S.C. 112, first and second paragraphs. These claims, which appear directed to the embodiment of Figure 6, are inconsistent with independent claims 1, 12 and 83, which do not appear to read on Figure 6. In response, applicants should attempt to read claims 1, 12 and 83 on Figure 6.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 6, 7, 10-12, 17-19, 23-25, 33-36, 40, 41, 83, 84, 86 and 89 are rejected under 35 U.S.C. 103 as unpatentable over Okuno et al '822 and the Chung el al article (4/01), considered together. The Chung el al article is considered as prior art under 35 U.S.C. 102(f) as requested by applicants in paper No. 16, filed 3 July 2003. Okuno et al (Figures 1, 4, 7C) show "drift" layer 2 (claims 4, 7, 25, 86), or for independent claims, layer 2 plus the inherent subportion of layer 5 on layer 2; "p-type" regions 3a, 3b; "n-type" regions 4a, 4b; "n-type shorting channels" inherent subportions of layer 5 in regions 3a, 3b. For film 7, it would have been obvious to use "nitrided oxide" as suggested by Chung el al (pages 177-8; Figures 1, 2), in order to achieve higher mobility. From Chung el al (page 177, Figure 1), it would have been obvious to decrease "interface state density" comparable to that in Chung el al (claims 10, 17, 33).

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Claims 8, 9, 13, 14, 16, 27-31 and 87 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being Okuno et al '822 and the Chung el al article (4/01), as in the above rejection, further considered with Okuno et al '700. It would have been obvious to use a thickness of layer 5 equal to or less than 0.3  $\mu$ m, as suggested by Okuno et al '700 (columns 3-4), and a dopant concentration of from less than  $1 \times 10^{15}$  to  $1 \times 10^{17}$  cm<sup>-3</sup>, as suggested by Okuno et al '700 (column 2) and Okuno et al '822 (column 2), in order to achieve depletion of layer 5.

Claims 5, 20, 37 and 88 are rejected under 35 U.S.C. 103 as unpatentable, the evidence being Okuno et al '822 and the Chung el al article (4/01), as in the above rejection, further considered with Fujii et al '231. It would have been obvious to dope polysilicon gate electrode 8 as in Okuno et al '822 with a p-type dopant, as in Fujii et al (column 7), in order to achieve a low resistance for a contact.

The references are of record.

The arguments in the response, filed 29 December 2003, have been considered but are not wholly persuasive, as noted above. Contrary to the response (pages 15-17), claims 1, 12 and 83 do not distinguish over Okuno et al '822, because the "n-type shorting channels" read on inherent subportions of layer 5 in regions 3a, 3b, and the "drift" layer reads on layer 2 plus the inherent subportion of layer 5 on layer 2.

Claims 15, 21, 22, 26, 32, 38 and 39 are allowed over the art of record.

This action is **FINAL**.

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This action is a **final rejection** and is intended to close the prosecution of this application. Applicant's reply under 37 CFR 1.113 to this action is limited either to an appeal to the Board of Patent Appeals and Interferences or to an amendment complying with the requirements set forth below.

If applicant should desire to appeal any rejection made by the examiner, a Notice of Appeal must be filed within the period for reply identifying the rejected claim or claims appealed. The Notice of Appeal must be accompanied by the required appeal fee of appropriate amount.

If applicant should desire to file an amendment, entry of a proposed amendment after final rejection cannot be made as a matter of right unless it merely cancels claims or complies with a formal requirement made earlier. Amendments touching the merits of the application which otherwise might not be proper may be admitted upon a showing a good and sufficient reasons why they are necessary and why they were not presented earlier.

A reply under 37 CFR 1.113 to a final rejection must include the appeal from, or cancellation of, each rejected claim. The filing, whichever is longer, of an amendment after final rejection, whether or not it is entered, does not stop the running of the statutory period for reply to the final rejection unless the examiner holds the claims to be in condition for allowance. Accordingly, if a Notice of Appeal has not been filed properly within the period for reply, or any extension of this period obtained under either 37 CFR 1.136(a) or (b), the application will become abandoned.

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**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a). A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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3/04/04

*Gene M. Munson*  
GENE M. MUNSON  
EXAMINER  
GROUP ART UNIT 2811